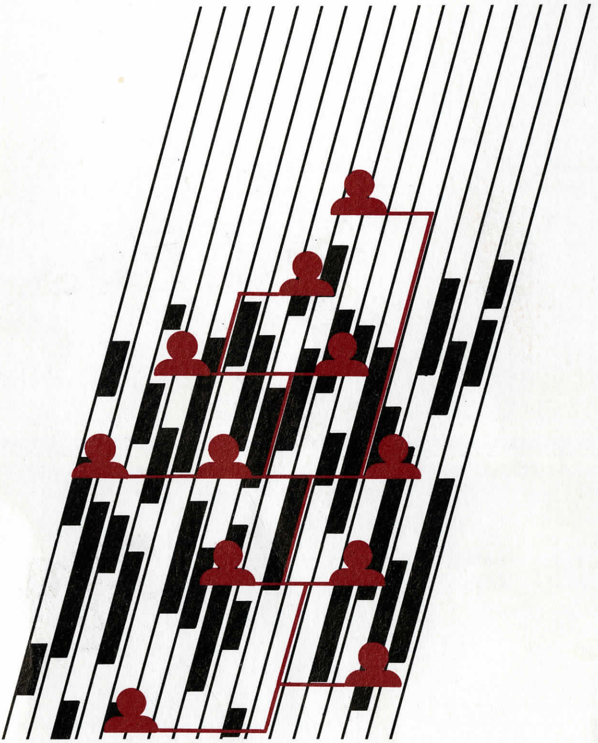
NESTAR



PERSONAL COMPUTER-BASED NETWORKS FOR THE LARGE ORGANIZATION

Nestar's PLAN™ for complete information handling

Nestar's PLAN Series™ is the Personal Local Area Network system that unites IBM and IBM-compatible personal computers with other system elements, ranging from printers and disk storage to mainframe computers, to form a complete information system for large organizations. A system that works! The field-proven PLAN Series hardware and software provide a powerful system that is fast, reliable, flexible—and cost effective.

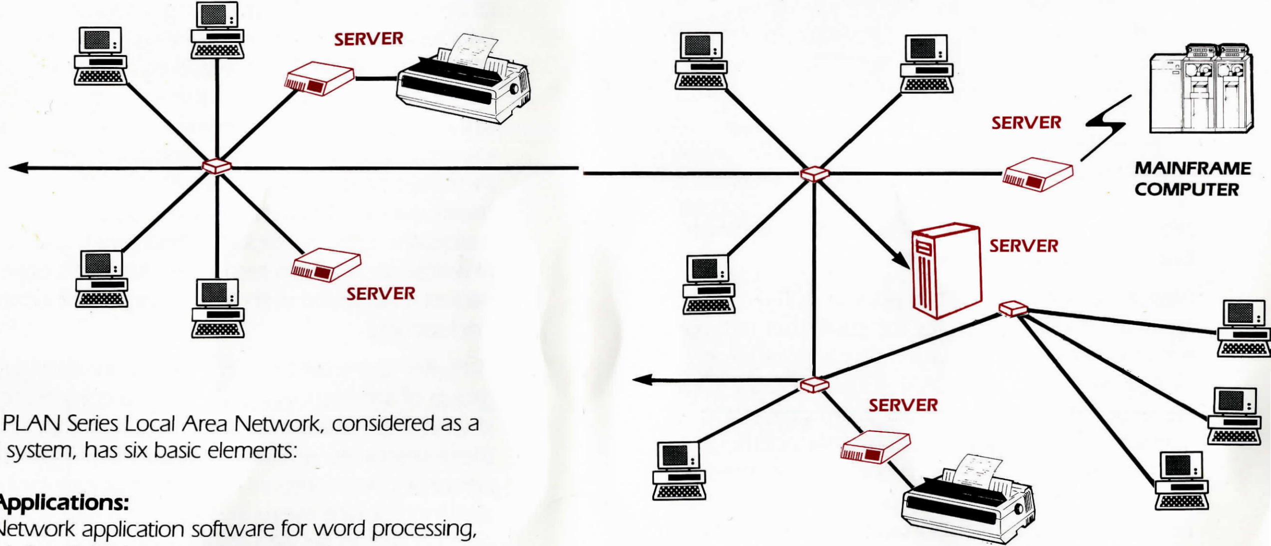
Nestar's PLAN Series local area network delivers all of an organization's computing resources to the people who need them via individual personal computers. With PCs networked as workstations, the PLAN Series combines the advantages of the stand-alone personal computer—user friendliness, low-cost software, flexibility and adaptability, and increased productivity—with the benefits of a true multi-user environment—shared data, shared hardware, greater efficiency, and better use of physical and human resources. And, this combination is achieved with full management control and security.

A PLAN Series network is much more than just a group of interconnected PCs. It is a community of shared information handling resources that unites those resources, through a network of individual personal computers, in a system that can include and incorporate every element from disk storage and printers to an IBM mainframe computer. The result is the large organization information handling system of the future. Available now—from Nestar Systems.

Linking personal computers to form a sophisticated information system for large organizations.

The PLAN Series network creates a complete, sophisticated information system by interconnecting personal computers with file, print, communication, and other special function servers—typically with a mainframe computer—by means of network interface cards that plug into PC peripheral slots. As illustrated, the network uses a starburst (arbitrary tree) topology that permits a very high degree of system flexibility. Access is controlled by a token-passing protocol which, in combination with the network's 2.5 Mbit/sec. transmission rate, maximizes performance as the number of user stations increases. (This is in contrast to contention protocols, which can suffer in performance as the number of user stations increases.) Interconnections can be either standard IBM 3270 co-ax cable (RG-62), IBM Cabling System cable (twisted pair of 100 micron fiber optic), or 200 micron fiber optic. Wiring junction boxes (HUBs), available with 4, 6, or 16 ports, are used as cable concentrators; a special HUB provides a gateway for broadband operation.

A PLAN Series network can support as many as 255 nodes (personal computers and/or servers), which can be separated by distances up to four miles (base band). The network supports the entire IBM personal computer family, together with any combination of most IBM-compatible personal computers.



The PLAN Series Local Area Network, considered as a total system, has six basic elements:

- **Applications:**
  Network application software for word processing, relational database management, electronic mail, spreadsheet, accounting, and most other applications.
- **Users:**
  The people served by the LAN, each with access through a personal computer.
- **Intelligent Nodes:**
  Personal computers, minicomputers, and mainframe computers.
- **Network Communications:**
  Network interface cards, which plug into peripheral slots in the personal computer, manage reliable communication between the intelligent nodes.
- **Cabling and Connections:**
  Cables which interconnect (at the network interfaces) the intelligent nodes and servers—any combination of coax, twisted pair, and fiber optic, both baseband and broadband—are tied together in an arbitrary (tree) topology using 4, 6, and 16 port HUBs.
- **Servers:**
  File server, print server, and communication server functions, operated by PLAN Series server vehicles,
  - **PLAN 1000:** device server
  - **PLAN 2000:** workstation-based servers
  - **PLAN 3000:** dual-function servers
  - **PLAN 4000:** multi-function server

Nestar's PLAN Series Local Area Network system . . .

Applications.

PLAN Series systems can accommodate most available IBM-compatible software for functions like: financial analysis, electronic mail, inventory control, office automation, banking services, word processing, and much more. However, using this software in a network environment does not make it multi-user; control must be provided to manage simultaneous access and record changing. And, multi-user license requirements must be met. This is why Nestar pioneered the concept of providing a starter library of application software bundled with each network.

Nestar has chosen a set of popular software applications, modified them for the multi-user network environment, and packaged them together as PLANPak,™ with the PLAN 3000 or PLAN 4000 file server. PLANPak provides word processing, spreadsheet, relational database management, and electronic mail, all with end-user oriented menus for easy access. It is pre-installed, and fully network licensed. Additional data base offerings, providing broad capabilities, are also available.

Application Software Starter Library

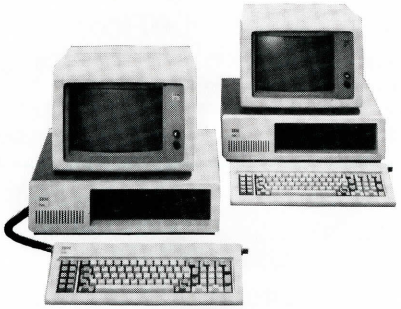
PLANPak	SUPERCALC 3™ SUPERWRITER™ LAN:MAILMONITOR™ LAN:DATASTORE™	Spreadsheet Word processing Electronic mail Relational DBMS
Other database offerings	LAN:DATACORE™ MDBS™ III PC FOCUS™ B-TRIEVE/N™	

Users.

The Nestar PLAN Series is designed for a very broad range of potential users. The system's exceptional capability is the result of the high level of sophistication used in its design. This advanced design makes the PLAN Series an ideal tool for information system managers and professionals, who can combine PLANPak and other software, in combination with the various system components, to customize the system for a wide variety of user-specific applications. Thus, at the user level, the system can be turnkey, with no requirement for and user knowledge of networks or operating systems.

Intelligent Nodes.

Personal computers serve as intelligent nodes for the PLAN Series system network. The system supports the entire IBM family of personal computers, plus many IBM compatibles. The table below summarizes the PCs/operating systems that can be used with the PLAN Series network.



MANU-FACTURER	PCs	OPERATING SYSTEMS
IBM	PC, Portable PC, XT, AT, 3270 PC, XT/370, AT/370	IBM PC DOS Versions 2.1, 3.0, 3.1 IBM PC Network Software
IBM PC Compatibles	AT&T, COMPAQ, ITT, SPERRY, ZENITH	MS DOS MS Networks
APPLE	II, ///	DOS, Pascal, SOS

Network Communications.

A Network Interface Card (NIC), plugged into a peripheral slot, transforms PCs into network stations without impairing any of their stand-alone capabilities. The NIC function is incorporated into the circuitry of the PLAN 1000, 3000, and 4000 servers. These cards control the transmission of data in the network.

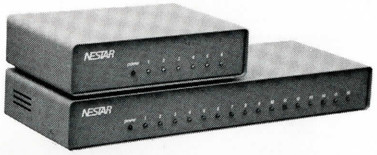
NIC	FOR
C-4708	PC, Portable PC, XT, 3270 PC, XT/370, AT, AT/370

Cabling and Connections.

Standard cabling for the PLAN Series network is RG-62 coaxial; the system also supports the IBM Cabling System and fiber optic cables, and can accommodate all three in a single network. Junction boxes (HUBs) connect all workstations and servers. Using multiple HUBs, workstations can be up to 22,000 feet apart.

CABLING OPTIONS

- ■ **IBM 3270 Coaxial (RG-62)**
- ■ **IBM Cabling System**
  - ☐ Type 1, 2 twisted pair
  - ☐ Type 5 fiber optic pair
- ■ **200μ Single fiber optic**
- ■ **Broadband backbone (IEEE 802 channels)**



HUBS	
C-4721	16 port (active)
C-4722	6 port (active)
C-4724	4 port (passive)

. . . state-of-the-art information handling for the large organization.

Server vehicles and functions.

Nestar provides four different server vehicles for the PLAN Series system, each specifically designed for a particular level of network operation:

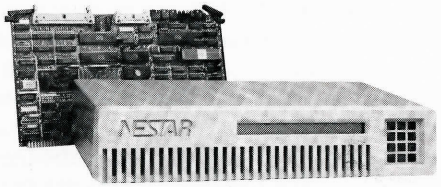
- ☐ **PLAN 1000** Device servers
- ☐ **PLAN 2000** Workstation-based servers
- ☐ **PLAN 3000** Mid-range, dual-function servers
- ☐ **PLAN 4000** High-end, multi-function servers

These server vehicles can be intermixed, enabling users to structure an expandable system that can be modified and grow to meet their changing needs. Any combination of servers is permitted in a single network.

By network function, these vehicles act as file servers, print servers, and communication servers, where communications includes Asynchronous Gateway, SNA Gateway, and Bisync Gateway functions. The table below shows the specific server functions available with each server vehicle. Essentially all server functions will be available with each server vehicle.

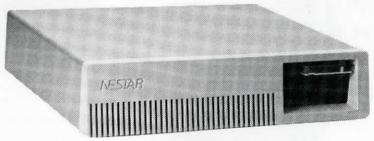
PLAN 1000: Nestar's PLAN 1000 is a line of device servers designed for high throughput at very low cost. These servers are designed to be modular building blocks that can accommodate a wide variety of applications. PLAN 1000 server functions are also available as integrated features of the PLAN 3000 and 4000 servers.

The PLAN 1000 line is initially available as a print server with one serial and two parallel ports. It features spooled printing, simultaneous use of up to three printers, no perceptible interjob time, and extensive operator/user queue management functions.



PLAN 2000: Nestar's PLAN 2000 is a family of workstation-based file, print, and communication servers. The print server supports multiple printers. The communication servers provide for asynchronous file transfer, asynchronous (modem pool), Bisync (3270), SNA (3270, 3770, and LU 6.2).

PLAN 3000: Nestar's PLAN 3000 is a mid-sized, desk-top, dual-function server that typically supports 12 to 24 users per server.



SERVER VEHICLE	SERVER FUNCTION				
			COMMUNICATION SERVER		
	FILE SERVER	PRINT SERVER	Asynchronous Gateway	SNA Gateway	Bisync Gateway
PLAN 1000		●	*	*	*
PLAN 2000	●	●	●	●	●
PLAN 3000	●	●	*	*	*
PLAN 4000	●	●	*	*	*

*Available various dates, 1985–86.

PLAN 4000: Nestar's PLAN 4000 is a high-end, floorstanding, multi-function server typically supporting 25 to 100 users per server. The larger capacity of the PLAN 4000 provides for heavy storage requirements with multiple additional server functions.

The PLAN 3000 and 4000 servers are, with the exceptions of expandability, capacity, and physical size, functionally the same. A network made up of multiple file servers can support up to 254 stations. Both of these servers feature large capacity drives, selective digital tape backup, a central network clock/calendar, shadow mode operation, and the capability to co-mingle IBM, IBM-compatible, and Apple personal computer workstations. The file server function manages access to shared storage, making efficient use of hard disk storage space. The Shadow™ option is a secondary file server providing transparent backup. When the primary file server is not available on-line, the secondary one is immediately functional.

All PLAN Series products offer a modular design with a high degree of flexibility. They also all provide complete system security, with passwords, controlled access rights, locks, and error checking/recovery.

PLAN SERVER CAPACITY

	FORMATTED	NESTAR I.D.
PLAN 3000	40 Mbytes	C-3050
	56 Mbytes	C-3070
	68 Mbytes	C-3085
PLAN 4000	60 Mbytes	C-4112
	137 Mbytes	C-4122
	274 Mbytes	C-4132
	411 Mbytes	C-4142
	548 Mbytes	C-4152

NESTAR

Nestar Systems has been developing local area network technology since 1978. Our mission is to design, develop, manufacture, market, install, and support the world's finest LAN hardware/software systems for large organizations. Nestar has become the technology leader in this field, specializing in:

☐ Designing and developing systems solutions for end users,

☐ Providing application solutions, and

☐ Working as a partner in supporting a wide variety of personal computers and their peripherals.

We back our state-of-the-art LAN capabilities and PLAN Series product line with a worldwide sales and service network. Nestar has a proven track record of helping large organizations develop the best LAN system for their specific needs, and supporting those systems after installation.

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NESTAR

NESTAR SYSTEMS INC.
2585 East Bayshore Road
Palo Alto, CA 94303
(415) 493-2223
Telex: 171420-NESTAR PLA

NESTAR SYSTEMS, EUROPE
122/3 High Street
Uxbridge, Middlesex UB8 1JT
United Kingdom
Telephone 44-895-59831

Offices in: Boston; Chicago;
Dallas; Hartford; Houston;
Los Angeles; Milan; New York;
Palo Alto; Paris;
Washington, D.C.

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